

CLAIMS

We claim:

- [c1] 1. A method in a computer system of restricting access to memory, the method comprising:
- setting a memory location to indicate a trap should occur when the memory location is accessed;
- under control of a restricted portion of a computer program,
- setting a pointer to point to the memory location that indicates that traps to the pointed to memory location are enabled; and
- accessing the memory location using the set pointer so that a trap occurs and access to the restricted memory location is detected; and
- under control of an unrestricted portion of a computer program,
- setting a pointer to point to the memory location that indicates that traps to the pointed to memory location are disabled; and
- accessing the memory location using the set pointer so that a trap does not occur and access to the restricted memory location is allowed.
- [c2] 2. The method of claim 1 wherein a user program typically accesses memory locations using pointers with traps enabled.
- [c3] 3. The method of claim 1 including setting all memory locations of a data structure to indicate a trap should occur when the memory locations are accessed.

- [c4] 4. The method of claim 1 wherein when the memory location is accessed, invoking a trap handler.
- [c5] 5. A system for restricting access to memory, the system comprising:
means for, under control of a computer program, indicating that a trap should occur
when a memory location is accessed;
means for, under control of a restricted portion of the computer program,
setting a pointer to a memory location wherein the pointer has an indication
of trap handling;
means for accessing the memory location; and
means for handling a trap wherein propriety of the access is detected.
- [c6] 6. The system of claim 5 wherein the indication of trap handling is enabled.
- [c7] 7. The system of claim 5 wherein the indication of trap handling is disabled.
- [c8] 8. The method of claim 5 wherein the propriety is unauthorized.
- [c9] 9. The method of claim 5 wherein the propriety is authorized.
- [c10] 10. A computer-readable medium for restricting access to memory, comprising:
a data structure with a plurality of elements;
a pointer to an element in the data structure, the pointer having an indication of
whether a trap is enabled depending on whether a restricted or unrestricted
portion of a computer program is accessing the data structure;
for each element, an indication of whether a trap is enabled; and
a handler including instructions for handling the enabled trap.
- [c11] 11. The computer-readable medium of claim 10 wherein the indication for an
element is enabled.

- [c12] 12. The computer-readable medium of claim 10 wherein the handler is invoked when the element in the data structure is accessed through a pointer whose indication is enabled.
- [c13] 13. The computer-readable medium of claim 10 wherein the handler is not invoked when the element in the data structure is accessed through a pointer whose indication is disabled.
- [c14] 14. The computer-readable medium of claim 13 wherein the indication for an element is disabled.
- [c15] 15. The computer-readable medium of claim 13 wherein the handler is invoked when the element in the data structure is accessed through a pointer whose indication is enabled.
- [c16] 16. A system for restricting access to memory comprising:
a component that sets a memory location to indicate a trap should occur when the memory location is accessed;
a component that, under control of a restricted portion of a computer program,
sets a pointer to point to the memory location that indicates that traps to the pointed to memory location are enabled; and
accesses the memory location using the set pointer so that a trap occurs and access to the restricted memory location is detected; and
a component that, under control of an unrestricted portion of a computer program,
sets a pointer to point to the memory location that indicates that traps to the pointed to memory location are disabled; and
accesses the memory location using the set pointer so that a trap does not occur and access to the restricted memory location is allowed.

- [c17] 17. The system of claim 16 wherein a user program typically accesses memory locations using pointers with traps enabled.
- [c18] 18. The system of claim 16 including a component that sets all memory locations of a data structure to indicate a trap should occur when the memory locations are accessed.
- [c19] 19. The system of claim 16 wherein when the memory location is accessed, a trap handler is invoked.